

## IN THE CLAIMS

1. (Currently Amended) A method for transcranial measurement of brain function, comprising the steps of:

preparing image data including images of a plurality of markers at positions on a head surface and a brain surface image; and

projecting the positions at the markers on the head surface which are positioned on a three-dimensional head image in the data onto positions on the brain surface, which are positions underlying the positions on the head surface, for determining three-dimensional coordinate positions of the projected points, thereby transforming head surface coordinates to brain surface coordinates,

wherein the step for projecting the positions on the head surface onto the positions on the brain surface is carried out by a minimum distance search method or a head surface/brain interior reference dotted line segment connecting method,

the minimum distance search method being a method in which equidistant spheres each having a different radius from an arbitrary point on the head surface in the three-dimensional head image are drawn, and contact points of the spheres and the brain surface are determined to obtain a minimum distance between the head surface and the brain surface expressed as a straight line, and

the head surface/brain interior reference dotted line segment connecting method being a method in which a straight line is drawn from an arbitrary point on the head surface in the three-dimensional head image to a reference point inside the brain surrounded by the head surface, and an intersection point of the straight line and the brain surface is determined as a projection point for the head surface point in question.

11. (Currently Amended) A transcranial brain function measuring apparatus comprising:

a probe having an irradiation point for irradiating a radial ray or an electromagnetic wave from a head surface of a subject to a interior thereof and a detection point for detecting an interaction of the irradiated radial ray or electromagnetic wave and a brain on the head surface; and

a data processor for analyzing a condition of the brain based on a signal detected by the detection point of the probe,

wherein the data processor is provided with a coordinate transformation section for transforming head surface coordinates to brain surface coordinates with data obtained by projecting positions on the head surface onto respective positions on the brain surface, whereby a position on the head surface decided by the irradiation point and the detection point are transformed to the brain surface coordinates, and the analysis data based on the signal detected by the detection point is displayed on the transformed brain surface coordinates, and

wherein the data obtained by projecting positions on the head surface onto respective positions on the brain surface is obtained by a minimum distance search method or a head surface/brain interior reference dotted line segment connecting method,

the minimum distance search method being a method in which equidistant spheres each having a different radius from an arbitrary point on the head surface in the three-dimensional head image are drawn, and contact points of the spheres and the brain surface are determined to obtain a minimum distance between the head surface and the brain surface expressed as a straight line, and

the head surface/brain interior reference dotted line segment connecting method being a method in which a straight line is drawn from an arbitrary point on the head surface in the three-dimensional head image to a reference point inside the brain surrounded by the head surface, and an intersection point of the straight line and the brain surface is determined as a projection point for the head surface point in question.